

**RESPONSE UNDER 37 C.F.R. § 1.111**  
**U. S. Application No. 09/640,684**

**REMARKS**

Claims 1-28 are all the claims pending in the application.

In response to the Amendment filed March 25, 2004, the Examiner removed the rejection under 35 U.S.C. § 112, second paragraph. However, the Examiner has maintained the rejection under 35 U.S.C. § 103 (a). Thus, the status of the claims is the following.

Claims 5-7, 12-14, 19-21 and 26-28 are rejected under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. Claims 5-7, 12-14, 19-21 and 26-28 would be allowable if amended to overcome the rejection under 35 U.S.C. § 112, second paragraph, and to include all of the limitations of the base claim and any intervening claims.

Claims 1-4, 8-11, 15-18 and 22-25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over previously-cited Neitzel et al. (US 5, 550,888) in view of previously-cited Yamazaki et al. (US 6,603,450).

On pages 2-4 of the Office Action, the Examiner provides his "Response to Arguments." Applicant has reviewed the Examiner's response, but does not find it to be convincing. In the Amendment filed March 25, Applicant argued that the prior art fails to teach or suggest the feature of claim 1 of setting an output brightness characteristic so that a rate of change, which represents a change in a logarithmic value of the output brightness with respect to a change in the value of the input image signal, in a first region of the image signal which is below a boundary value  $S_a$  becomes smaller than that in a second region of the input image signal which is above the boundary value  $S_a$ . The Examiner refers to column 16, lines 50-64 of Yamazaki as allegedly disclosing this feature of the claim. However, the portion of the reference cited by the Examiner

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refers to peak luminance and average levels of an input luminance signal. By contrast, the cited excerpt does not describe setting the output characteristics so that a rate of change in a first region of the image signal which is below a boundary value  $S_a$  becomes smaller than that in a second region of the input image signal which is above the boundary value  $S_a$ . In fact, Yamazaki does not disclose or suggest anything about a rate of change in first and second regions of an image signal. Thus, claim 1 is allowable for at least this reason.

With regard to the feature of claim 1 of the boundary value  $S_a$  between the first region and the second region being represented by the equation  $0.05 \times S_{\max} \leq S_a \leq 0.30 \times S_{\max}$ , where  $S_{\max}$  is the maximum value of the image signal in the output brightness characteristic, the Examiner asserts that  $S_{\max}$  is very broad because the  $S_a$  covers between 0 to  $+\infty$ . This is not correct. As defined in claim 1,  $S_{\max}$  is the maximum value of the image signal in the output brightness characteristic. Thus,  $S_{\max}$  is limited.  $S_{\max}$  is less than  $+\infty$ . Accordingly,  $S_a$  is also limited to be less than  $+\infty$ , as defined in the equation in claim 1. For example, the limits of  $S_a$  and  $S_{\max}$  are illustrated in Figs. 2A-4B of the present invention. Moreover, as argued in the March 25 Amendment, Yamazaki fails to teach or even suggest the equation recited in claim 1. Nothing in the Examiner's response provides any support for the Examiner's position that the equation cited in claim 1 is disclosed or suggested by Yamazaki. Based on the foregoing, Applicant submits that claims 1-4 and 8-11 are allowable over the prior art.

On page 4 of the Office Action, in the Response to Arguments, the Examiner asserts that in claim 1 of the present invention  $S_a$  is the input image signal. This is not correct.  $S_a$  is not claimed as the input signal. Rather  $S_a$  is a boundary value between the first region of the image signal and the second region of the image signal. The Examiner continues by describing Fig. 4

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of Yamazaki with regard to its input video signal and its output image signal. However, in light of the fact that  $S_a$  is a boundary value instead of an input image signal, the Examiner's comments regarding Fig. 4 of Yamazaki are misplaced.

Also, on page 4 of the Office Action, the Examiner refers to Fig. 11 of Yamazaki in regard to boundary values between two regions and the particular equations recited in claim 1 of the present invention. Fig. 11 of Yamazaki illustrates luminance values which range between 11 and 15 volts. However, neither Fig 11 nor the remainder of the reference teach or suggest the claimed boundary value of claim 1 between a first region of the image signal and a second region of the image signal. Moreover, Yamazaki does not disclose or suggest the equation recited in claim 1.

Additionally, the Examiner remarks that "the x-ray is one of the applications of the inventions." Here the Examiner is responding to the arguments on page 17 of the March 25 Amendment related to the combination of the Yamazaki and Neitzel references. However, the arguments presented on page 17 of the March 25 Amendment relate to the combination of references, rather than the Applicant's invention. In other words, regardless of the applications of the Applicant's invention, there must still be a particular suggestion or motivation in the references to combine the specific teachings of the references. Applicant submits that no such particular suggestion is present here.

For at least the above described reasons, as well as the reasons presented in the March 25 Amendment, claims 1-4, 8-11, 15-18 and 22-25 are allowable over prior art.

With respect to the rejection under 35 U.S.C. § 112 second paragraph, Applicant has the following comments.

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The Examiner asserts that the omitted elements include the limitation in claim 8 of a first portion of the second region of the image signal becomes greater than that in a second portion of second region of the image signal. Further, the Examiner asserts that the value of  $S_{\max}$  is undefined. However, this is not correct.  $S_{\max}$  is defined in claim 1 as the maximum value of the image in the output brightness characteristic. In the March 25 Amendment, many of the claims were amended to remove redundant limitations. For example, claim 12 was amended to delete the limitation of  $S_{\max}$  being the maximum value of the image signal in the output brightness characteristic. This feature was removed from claim 12 and other claims, because this limitation is already present in claim 1. Hence, the Examiner's assertion that  $S_{\max}$  is not defined is not correct.

With respect to feature of claim 8 of the first and second portions of the second region of the image signal, Applicant submits that this feature simply defines the second region of the image signal as having first and second portions. As described in claim 8, the first portion of second region has a change rate that becomes greater than the change rate in the second portion of the second region. Since the features of claim 8 are clearly defined, and since  $S_{\max}$  is clearly defined in the claims, Applicant submits there are no omitted elements in the claims. Therefore, claims 5-17, 12-14, 19-21 and 26-28 are complete and should be allowable.

Also, claims 15-18 and 22-25 are allowable over the prior art for at least the same reasons as those described above in relations to claims 1-4 and 8-11.

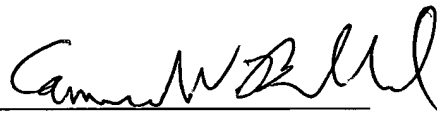
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

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Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Cameron W. Beddard  
Registration No. 46,545

SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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